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VERIFICATION OF TRANSLATION

I, DAVID NEVILLE PETERS, Chartered Patent Agent, of Dr. Walther Wolff & Co, 19 Catherine Place, London SW1E 6DX, United Kingdom, declare that I am conversant with the German and the English languages and that I am the translator of the document attached and certify that to the best of my knowledge and belief the following is a true and correct English translation of the specification contained in the International Application PCT/EP2003/009902 (Publication No WO 2004/025166 A1).

Signature of the translator



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DESCRIPTION

The invention relates to a damper according to the introductory part of claim 1.

In the case of a damper, which is known from EP 1 002 984 A2 (Fig. 1) and is in accordance with the category, for water fittings a unitary housing (1) thereof is constructed as a pipe nipple with widened internal diameter (6) and radial end faces (8, 9) for bounding the installation space for the damping element (7) and is a support of a wall rosette. For installation of the damping element this is introduced into the installation space by the widened nipple stub pipe with external thread for the connecting fastening by means of box nut at the fitting body (see DIN EN 200, page 9, Fig. 8 on the right - July 1990), whereupon this nipple stub pipe is narrowed to the internal width of the other nipple stud pipe by use of a bush (10). Only then can the hose member (2) be drawn in and clamped fast by means of flange sleeves (4 and 11).

In that case it is disadvantageous that installation of the damping element and the positional securing thereof are inconvenient and not possible in all dimensional relationships.

The invention is therefore based on the task of creating a damper according to category for connection of a sanitary fitting, which allows a simple installation of the damping element which is easy to secure.

This task is solved by the characterising features of claim 1: through the divisibility of the housing, one side thereof can be axially opened to such an extent that the damping element can be axially introduced into the enclosure, which is stiff in bending, without resilient deformation after it was laid in the predominantly open enclosure. Insertion thereof into the housing produces a mechanically positive couple between the two, which allows design of the external shape of the housing of the fitting connection independently of the respectively required shape of the damping element.

Advantageous refinements and developments of the damper according to the invention are characterised in claims 2 to 10: particularly advantageous is construction (according to claim 4) of the damping element, support pipe and hose member as a unitary cartridge, since the shape thereof can, with appropriate internal shaping of the housing of the

intermediate member or connecting member, remain the same notwithstanding a variable housing shape, thus represents a fixed size in production.

The invention is explained in detail in the following on the basis of two preferred forms of embodiment, which are illustrated by way of example by the accompanying drawing, of the damper according to the invention in conjunction with the connection of sanitary fittings.

There:

Fig. 1 shows a central longitudinal section through the first form of embodiment of a connecting member with damper cartridge, in one half;

Fig. 2 shows a partly reproduced corresponding section through a variant of the connecting member (with box nut);

Fig. 3 shows the central longitudinal section through the second form of embodiment of a connecting member for single-hole fittings, with damper cartridge; and

Fig. 4 shows a cross-section according to the line IV - IV in Fig. 3 through the cartridge of the second form of embodiment.

The two damper cartridges of the two forms of embodiment differ in the reciprocal connection of their respective two identical halves 10.1 and 10.2 or 110.1 and 110.2 of a form-stable enclosure 10 or 110 for receiving an afluidic damping element 12, which consists of an elastomer with closed pores and by its circularly cylindrical tubular shape completely fills the cavity formed on the one hand by the enclosure and on the other hand by a resilient hose member 14, which in operation conducts water and is acted on by water sound. Each enclosure 10 or 110 consists of a circularly cylindrical casing which is divided in its centre and two parallel single-part or two-part annular discs 18, which are arranged in radial planes and the bore edges of which surround the outer circumference of the hose member 14, wherein they axially inwardly contact two flange-like sealing beads 20 which are present at the ends thereof and which are radially outwardly loaded by two annular closed end portions 22.1 of a circularly cylindrical support pipe 22, which is stiff in bending, with axially parallel oblong slots 22.2. Mains water disposed under pressure passes through this slot 22.2 to the inner circumference of the hose member 14, which co-

operates with the damping element 12 like a series of two springs, the rates of which are advantageously matched to one another. Whereas in the first example of embodiment the two pot-shaped halves 10.1 and 10.2 of the enclosure 10, which is divided transversely with respect to the axis, axially abut flushly and in butt-joint manner without further measures, since they adhere to the unitary damping element 12 through friction couple therewith, in the second example of embodiment the two shell-shaped halves 110.1. and 110.2 of the enclosure 110, which is divided longitudinally of the axis, are connected together by means of identical snap connections 124 which respectively consist of hooks 124.1 and eyes 124.2, as Fig. 4 illustrates; these can be disposed in paired manner in the radial centre plane of the enclosure 110 or at the two ends thereof or extend over the entire enclosure length. In summary, it is to be established that each of the two damper cartridges is an integral constructional unit of the enclosure 10 or 110 with the damping element 12, the hose member 14 with sealing beads 20 and the support pipe 22 with slots 22.2. This unit is handled as whole and inserted in a housing 26 or 126, which surrounds it, of the fitting connection before it is laterally water-tightly closed longitudinally of the axis by means of a threaded ring 28 or 128 with axially outwardly displaced outer thread 30 or 130 for a box nut which is indicated in Fig. 3, at the fitting body as far as the central water channel 32 or 132. It is essential that not only the housing 26 or 126 at one end (on the side of the cartridge remote from the threaded ring), but also the threaded ring 28 or 128 at the other end each have one of two radially inner shoulders 34 and 36 formed in mirror image as well as one of two identical encircling inner surfaces 38 and 48, against each of which a respective one of the two sealing beads 20 bears, in the case of the inner surface, with pressing by the support pipe 22 so that water tightness is present there.

Since the housing 26 or 126 has a rectangular cavity profile, in which also the threaded ring 28 or 128 is involved, and the cartridge fits in exactly, not only the outer circumferential surface of the damping element 12 bears against the inner circumferential surface of the enclosure 10 or 110, but also the outer circumferential surface thereof bears against the inner circumferential surface of the housing; moreover, one of the two enclosure discs 18 bears against a radial inner surface 27 or 127 of the housing, whilst the other disc 18 bears against the radial inner surface 28.1 or 128.1 of the screwed-in threaded ring 28 or 128. The cavity, which is formed by the housing 26 or 126 and the threaded ring 28 or 128, radially outside the water channel 32 or 132 is therefore completely filled by the cartridge.

The first form of embodiment of the damper is integrated in a connecting member which according to Fig. 1 comprises the housing 26 and at the right thereof the threaded ring 28 with offset external thread 30 for screwing on a box nut at the fitting side as well as at the left of the housing 26 a stub pipe 42 with external thread for screwing into a duct pipe end, which is at the wall side, with internal thread.

The second form of embodiment of the damper is integrated in a similar connecting member, which according to Fig. 3 comprises the similar housing 126 and thereabove the functionally identical, similar threaded ring 128 with offset external thread 130 as well as, below the housing 126, a stub pipe 144 with internal thread. It is also indicated in Fig. 3 by dot-dashed lines that in this example of embodiment a connection is conceivable of a so-called single-hole fitting to a corner valve, which is at the wall side, by way of the illustrated connecting member with incorporated damper in cartridge form.

The first form of embodiment of the damper is also usable in conjunction with the variant, which is shown in Fig. 2, of the connecting member of Fig. 1, in which the threaded ring 28 thereof is replaced by the combination of an intermediate ring 46, which is screwed into the housing 26, and a support ring 48, which is screwed into this and on which a box nut 50 is loosely seated and is screwed to the fitting.